

REPORT BY THE TASK TEAM ON METADATA FOR WMO NO. 47

(Report submitted by Graeme Ball on behalf of the Task Team)

1. Current Terms of Reference

Tasks:

1. Prepare a submission to JCOMM-II regarding the proposed changes to WMO-No. 47 (Pub. 47) metadata based on the recommendations from SOT-III.
2. Prepare a consolidated list of ship routes in accordance with the submission to JCOMM-II for presentation at SOT-IV.
3. Regularly review the Pub. 47 metadata requirements and make recommendations as appropriate.
4. Monitor the receipt of regular Pub. 47 updates at WMO from participating VOS members.
5. Review all relevant JCOMM Publications to ensure they are up-to-date and comply with Quality Management terminology.

Members:

Graeme Ball (TT chairperson, Australia)
Pierre Blouch (France)
Yvonne Cook (Canada)
Julie Fletcher (New Zealand)
Elizabeth Kent (United Kingdom)
Robert Luke (USA)
Sarah North (United Kingdom)

2. Status of Action Items from SOT-IV

Nil action items.

3. Ongoing Activities / Standard Tasks

Task 1

1. This item was completed and reported at SOT-IV and is no longer applicable.

Task 2

1. This item was completed and reported at SOT-IV and is no longer applicable.

Task 3

1. The Task Team reviewed Code Table 1801, the list of 2 letter ISO Country Codes, and determined that changes were required to retain consistency with the official ISO list. The required changes were made to WMO No. 47, metadata version 03 (document version 3.3), and issued on 3 June 2008 and placed on the VOS website.

2. The Task Team considered Code Table 0204, Location of the Barometer, and recommends removing CR – Chart Room. See **5. Recommendations for Metadata Requirements No. 1** for further details.
3. The Task Team considered Code Table 0801, Exposure of the hygrometer and Exposure of the dry bulb thermometer, and recommends removing the ambiguity between a Sling Psychrometer and a Whirling Psychrometer. See **5. Recommendations for Metadata Requirements No. 2** for further details.
4. The Task Team, in consultation with the Task Team on VOSCLim, recommends introducing a new class of meteorological reporting vessel in Code Table 2202 for VOSCLim, a VOS Climate Reference Ship. See **5. Recommendations for Metadata Requirements No. 3** for further details.
5. The Task Team, recognising (1) the increasing use of AWS, (2) the wide disparity in the level of sophistication between AWS systems, and (3) some AWS might not be owned, installed and maintained by an NMS, recommends introducing an AWS sub-class in each of the four VOS classes. See **5. Recommendations for Metadata Requirements No. 4** for further details.
6. The Task Team, recognising the trend to equip a ship with an AWS but at the same time retaining the original manual system as a completely independent observing system, recommends permitting multiple entries in WMO No. 47 from the same ship for each independent observing system. See **5. Recommendations for Metadata Requirements No. 5** for further details.
7. The Task Team, in an effort to continually, improve the Pub. 47 documentation, will add the VOS Class definitions to Code Table 2202.
8. The Task Team reviewed the minimum requirements for Vessel Digital Images, including suggested sketches and drawings, from the four main VOS Classes (VOSCLim, Selected, Supplementary and Auxiliary) as described in WMO No. 47, Metadata Version Format 03, Annex 6, and recommends that all items be mandatory for VOSCLim. See **5. Recommendations for Metadata Requirements No. 6** for further details.

Task 4

1. The Task Team collated the information provided on the WMO website regarding all Pub. 47 submissions from members since SOT-IV until the end of 2008. This information is given in *Annex 1*. The Task Team is pleased to note most submissions are now in the XML metadata exchange format.
2. To assist members produce an XML file containing their national Pub. 47 metadata, the Task Team, in conjunction with the TT-VRPP, developed an Excel-based **Pub47 XML Generator**¹ tool. This tool is available for download from the VOS website.

Task 5

1. No specific action during the inter-sessional period

4. General Issues and Recommendations

1: <http://www.bom.gov.au/jcomm/vos/download/pub47-xml-generator.zip>

1. The Task Team remains extremely concerned about the excessive delay to post updated Pub. 47 metadata on the WMO website. At the time of writing (late February 2009), the most recent metadata available on the WMO website is from Q1 2008. The metadata contained in Pub. 47 is a valuable resource used by many groups and organisations, including PMOs, VOS Programme Managers, JCOMMOPS, RSMC, RTMC and the VOSCLIM DAC. Not having up-to-date metadata impacts particularly on (1) national operations, i.e. the ability to plan recruitments and schedule foreign ships visits, and (2) national and global quality monitoring, i.e. the ability to identify suspect ships and contact the appropriate VOS FP. For VOS Programme Managers it is extremely frustrating when the hard work required maintaining ships' records, and then preparing and submitting quarterly Pub. 47 reports appear wasted.

These same issues were discussed at SOT-IV, culminating in a recommendation that JCOMMOPS: (1) receives the quarterly national Pub. 47 submissions, (2) prepare the quarterly global Pub. 47 report, and (3) hosts the Pub. 47 report on the JCOMMOPS website. There was good support for the recommendation from many areas, however the Secretariat informed the Panel that Pub. 47 is a mandatory WMO publication with specific rules governing its management and distribution.

One option discussed by the Team, would be to ultimately, integrate Pub. 47 with a range of other WMO catalogues (WMO Publication No. 9, Volume A, Observing Stations and WMO Catalogue of Radiosondes) as part of the WMO Information System (WIS). The benefit of this for the SOT would be revised and hopefully more expedient distribution methods. The timetable for the change described above is not expected to be within the coming inter-sessional period and will therefore not benefit the SOT in the short-term

The Team noted that the present content of Pub. 47 could be divided in two parts (i) the description of the format in which national submissions should be made and the Publication's format itself, and (ii) the database itself containing the ship metadata. The Team agreed that the format description part was indeed relevant to a WMO Publication as a standard but that the metadata parts was more relevant to the WMO Information System (WIS) and could be separated from the Publication.

As a preliminary measure to improve the timeliness of delivery of the quarterly global VOS metadata to end users, the Task Team invited WMO to consider routinely forwarding national contributions to JCOMMOPS as they become available, and JCOMMOPS to compile an informal list of metadata to be used by VOS operators and PMOs in their daily operations. The Pub47 would continue to be produced normally although WMO is urged to make it available on the web site with minimal delays.

As a longer-term measure, in order to permit more effective solutions for the management and timely delivery of the information to end users, the Task Team invited JCOMM to liaise with CBS on such observing platform metadata issues and consider recommending that WMO Congress change the status of Pub. 47 in such a way (i) that it would eventually be removed from the list of Mandatory Publications, (ii) that the regulatory part documenting the need for VOS metadata, metadata collection and exchange procedures and format would be included in the future manual on the WIS, and (iii) that the metadata/dynamic part of the Publication would be managed as part of the WIS and not regarded as a Publication anymore. The procedures and formats for collecting the metadata from Members, applying appropriate quality control, compiling the submissions into an integrated database, and distributing the metadata will have to be discussed by the SOT in liaison with the CBS. The roles of the WMO Secretariat, Members, and JCOMMOPS - or any national centre willing to manage the VOS metadata database - will have to be clarified.

Recommendation

- a. That WMO, either alone or in association with JCOMMOPS, commits to update Pub. 47, a mandatory WMO publication, on the WMO website each quarter within 2 months of the due date for submission by members, i.e. to update the WMO website by 15 May, 15 August, 15 November and 15 February.
 - b. That WMO routinely forwards national contributions to JCOMMOPS as they become available, and that JCOMMOPS compiles an informal list of metadata to be used by VOS operators and PMOs in their daily operations.
 - c. That JCOMM and CBS begin discussions regarding future management of observing platform metadata as part of the WIS.
2. The Task Team is also concerned that the CSV version of Pub. 47 provided on the WMO website is incapable of fully, and in complete detail, showing the footnotes provided in XML format by members. This is of particular concern because the majority of national submissions to Pub. 47 are now in XML exchange format (see *Annex 1*) with potentially more footnotes than previously. It is important that all of the supplied information is available to those groups and organisations that rely on Pub. 47.

Recommendation

That WMO commits to display all Pub. 47 metadata, including all footnotes and implied details, on the WMO website.

3. At SOT-II, WMO committed to improve the usability of Pub. 47 by (1) displaying the metadata in a more presentable format, and (2) providing a search facility. To date neither of these changes has been effected with the Pub. 47 metadata still presented in CSV format. As a result, only basic searches are possible and the non-alignment of fields makes comparing ships impossible. To fully utilise Pub. 47 it is necessary to download the file and parse it into a spreadsheet. This requires additional skills and knowledge of the structure of the CSV file to assign column headings to the tabulated metadata.

Recommendation

That WMO commits to urgently, improve the usability of the Pub. 47 metadata presented on the WMO website.

5. Recommendations for Metadata Requirements

1. Code Table 0204 – Location of the Barometer

Proposal

To remove CR – Chart Room.

Discussion

The Task Team considers this entry redundant as in most cases the Chart Room is connected to the wheelhouse.

Impact on Pub. 47

The resultant changes to Pub. 47 Code Table 0204 are given in *Annex 2*.

2. **Code Table 0801 - Exposure of the hygrometer and Exposure of the dry bulb thermometer,**

Proposal

To (a) remove SL - Sling psychrometer and to (b) rename W - Whirling psychrometer to W - Whirling or Sling psychrometer.

Discussion

The Task Team considers these two instruments to be the same, and is supported by the following extracts from the UK Met Office glossary:

sling thermometer: *a thermometer mounted on a frame pivoted about a handle so that it can be whirled by hand, thus providing ventilation. If the bulb is shielded from direct solar radiation, satisfactory readings of air temperature can thus be obtained in a simple and inexpensive manner. A pair of thermometer, dry- and wet-bulb, similarly used constitutes a 'sling' or 'whirling' psychrometer.*

whirling psychrometer: *'a psychrometer in which the thermometers are mounted on a frame which is rapidly rotated by hand in order to provide the required ventilation of the bulbs. It is also termed a 'sling psychrometer'*

Impact on Pub. 47

The resultant changes to Pub. 47 Code Table 0801 are given in *Annex 2*.

3. **Code Table 2202 – Type of Meteorological Reporting Ship (first proposal)**

Proposal

To introduce 30 – VOSClm, for VOS Climate Reference Ship, as a new class of meteorological reporting ship.

Discussion

The Task Team on VOSClm is expected to recommend under Item III-4.1, VOSClm Project Status and Implications, to terminate the project status of VOSClm and start applying the benefits learned to the wider VOS as happened following VOSP-NA, the predecessor to VOSClm.

The Task Team encouraged the upgrading of regular VOS to VOSClm standard wherever possible, and, in consultation with the Chairs of SOT and VOSP, is supporting the introduction of a new class of meteorological reporting vessel to accommodate VOSClm standard ships.

The criteria for declaring a ship as VOSClm will be proposed under agenda item III-4.1, VOSClm Project Status and Implications, and will be confirmed under item III-4.5, Review of VOS Categories.

Impact on Pub. 47

The resultant change to Pub. 47 Code Table 2202 is given in *Annex 2*.

4. **Code Table 2202 – Type of Meteorological Reporting Ship (second proposal)**

Proposal

To introduce an AWS sub-class within each of the VOS classes:

15 – Selected (AWS)

35 – VOSclim (AWS)

45 – Supplementary (AWS)

75 – Auxiliary (AWS)

Discussion

NMS are increasingly using shipboard AWS to provide ship's weather reports for reasons that are well known within the VOS community. The level of sophistication of these AWS varies greatly. Many AWS contain the full suite of sensors and provide a manual input facility, whilst others are simple stand-alone systems offering a reduced sensor suite. Some ships might even be fitted with an AWS during construction.

The Task Team considers it desirable to: (1) be able to differentiate between the levels of sophistication of different AWS, and (2) differentiate between AWS owned, installed and maintained by an NMS as opposed to an AWS owned by a ship with a less rigorous maintenance schedule.

The criteria for each of the AWS sub-classes will be discussed under agenda item III-4.5, Review of VOS Categories.

Impact on Pub. 47

The resultant changes to Pub. 47 Code Table 2202 are given in *Annex 2*.

5. **Code Table 2202 – Type of Meteorological Reporting Ship (third proposal)**

Proposal

To permit multiple entries from one ship in Pub. 47 where: (1) the ship is fitted with multiple observing systems, and (2) each observing system operates completely independently of the other.

Discussion

Some ships now being equipped with an AWS are retaining the original manual system, both the equipment and the reporting method, resulting in dual data streams from the ship.

The Task Team considers that because the observing systems are independent of each other, that each system represents a separate observing platform possessing its own unique metadata, and should be regarded as separate entries in Pub. 47.

Whilst not a formal recommendation, the Task Team would encourage members using multiple and independent systems as described above, to: (1) consider using an alternative and unique callsign (approved by the Task Team on Callsign Masking and Encoding) for the secondary observing system, and (2) to aid clarity in Pub. 47 to append "(AWS)" to the ship name if the class = 15, 35, 45 or 75.

Impact on Pub. 47

Multiple entries from the same ship appearing in WMO No. 47, comprising some identical metadata and some unique metadata.

6. Vessel Digital images, Annex 6 to Code Table 2203

Proposal

To make mandatory for all ships classified as VOS_{clim}: (1) the full suite of recommended digital images and, (2) all suggested sketches and drawing.

Discussion

Ship classified as VOS_{clim} under the new VOS Classes, in addition to providing observations for routine forecasts and warnings will be used in climate studies. For climate monitoring purposes, it is critical that the properties of the observing platform are fully and accurately recorded and updated whenever there is a change.

Photographs and drawings provide much greater detail about instrument location and exposure than could be inferred from the coded Pub. 47 metadata. The Task Team recognises that this additional detail is vital in detecting real climate trends from locally induced effects.

Impact on Pub. 47

The resultant changes to Pub. 47 Annex 6, Vessel Digital Images (Code Table 2203) are given in *Annex 2*.

6. Review the Terms of Reference

As reported under **3. Ongoing Activities / Standard Tasks**, Task 1 and Task 2 were completed and reported at SOT-IV and should have been removed from the ToR Task List at SOT-IV. Apart from deleting these tasks, the Task Team does not propose any further changes to the Terms of Reference Task List.

Accordingly, the Task Team submits the following revised Task List for consideration by the Panel.

Tasks

1. Regularly review the Pub. 47 metadata requirements and make recommendations as appropriate.
2. Monitor the receipt of regular Pub. 47 updates at WMO from participating VOS members.

3. Review all relevant JCOMM Publications to ensure they are up to date and comply with Quality Management terminology.

7. Summary of action proposed

The Team is invited to:

1. Note the information contained in this report and comment as appropriate;
 2. Review and discuss the recommendations relating to WMO No. 47 general issues;
 3. Review and discuss the recommendations relating to WMO No. 47 metadata requirements;
 4. Review the Tasks of the Task Team;
 5. Review the existing membership of the Task Team and encourage new members.
-

ANNEX 1

WMO No. 47 Updates from Members

Member	Q2 2007		Q3 2007		Q4 2007	
	CSV	XML	CSV	XML	CSV	XML
Australia		x		x		x
Canada	x		x		x	
Denmark		x		x		
France	x		x		x	
Germany	x		x		x	
Greece	x		x		x	
Hong Kong	x		x		x	
India	x (02)				x	
Ireland			x		x	
Israel			x			
Japan		x		x		x
Malaysia	x					
Netherlands	x (02)		x		x	
Norway	x		x		x	
New Zealand		x		x		x
Poland			x			
Russian Fed.			x (02)			
Spain	x (02)				x	
Sweden			x (02)		x	
UK	x		x		x	
USA	x (02)				x	
	12	4	13	4	13	3

Table 1. 2007 Pub. 47 submission post SOT-IV.
(02) indicates metadata in version 02

Member	Q1 2008		Q2 2008		Q3 2008		Q4 2008	
	CSV	XML	CSV	XML	CSV	XML	CSV	XML
Australia		x		x		x		x
Canada	x		x		x		x	
Europe (EU)				x		x		x
France	x			x		x		x
Germany	x			x		x		x
Greece		x		x		x		x
Hong Kong	x		x		x		x	
India				x (?)		x (?)		
Ireland						x		x
Japan		x		x		x		
Netherlands	x			x		x		x
Norway						x		x
New Zealand		x		x		x		x
Spain				x		x		x
Sweden	x			x		x		x
UK	x			x		x		x
USA	x				x	x		
	8	4	2	12	3	15	2	12

Table 2. 2008 Pub. 47 submissions from members.
(?) indicates XML formatting errors

ANNEX 2

Proposed Changes to WMO No. 47 Code Tables

0204

brmL **Location of the barometer.**

Code	Description
PW	Pressurised wheelhouse (closed and not vented to the outside).
WH	Wheelhouse not pressurised (vented to the outside).
OT	Other (specify in footnote).

notes

CR Is deleted

0801

hgrE **Exposure of the hygrometer.**
thmE **Exposure of the dry bulb thermometer.**

Code	Description
A	Aspirated (Assmann type).
S	Screen (non-ventilated, i.e. natural ventilation).
VS	Screen (ventilated, i.e. assisted ventilation).
SN	Ship's screen (property of the ship).
SG	Ship's sling.
US	Unscreened.
W	Whirling or Sling psychrometer.

notesSL Is deleted and replaced by code **W** – Whirling or Sling psychrometer

2202

vssIM **Type of meteorological reporting ship.**

Code	Description
10	Selected
15	Selected (AWS)
30	VOSClim
35	VOSClim (AWS)
40	Supplementary
45	Supplementary (AWS)
70	Auxiliary
75	Auxiliary (AWS)
OT	Other (specify in footnote).

additions

15	Selected (AWS)
30	VOSClim : for VOS Climate Reference Ship
35	VOSClim (AWS)
45	Supplementary (AWS)
75	Auxiliary (AWS)

notes

10	Replaces former codes 20, 21 and 22, which were vessel type specific.
40	Replaces former codes 60 and 61, which were vessel type specific.
70	Replaces former codes 80 and 81, which were vessel type specific.
OT	Replaces former code 99

Codes **88-90**, formerly used by the USA, are deleted in favour of the generic codes **10, 40** and **70**.

Vessel Digital Images (Code Table 2203) - Annex 6**1. Recommended minimum suite of digital images/photographs**

Description	VOSClim	Sel / Supp / Aux
Exposure of screen(s) showing the location of any adjacent obstructions, over-hangings, etc	Yes	Yes
Exposure of anemometer (if applicable)	Yes	Yes
Exposure of other meteorological instruments	Yes	Optional
Ship's profile – quayside or at sea if possible	Yes	Yes
Deck cargo stowage (if applicable)	Yes	Optional

2. Suggested drawings/sketches

Description	VOSClim	Sel / Supp / Aux
Ship's general profile – basic sketch showing instrument location and dimensions	Yes	Optional
Navigational Bridge Deck/wheelhouse plan – basic sketch showing instrument location	Yes	Optional
General Arrangement Plan or drawing	Yes	Optional
